CLAIMS

1   1. A network device, comprising:

2   a first linecard receiving input computer network packets from a computer net-

3   work, said line card translating said packets into segments;

4   a switching fabric receiving segments from said linecard, said switching fabric to

5   route said segments to a desired output linecard, said switching fabric having at least one

6   queue therein, said queue having a threshold such that in the event that a segment arrives

7   at said queue and said queue is filled above said threshold, a bit of said segment is set as

8   said segment is passed out of said queue, said bit being set "marking" said segment as

9   that segment having passed through a queue filled above said lower threshold level;

10   a second line card receiving said segments from said switching fabric, said second

11   linecard translating said segments into a computer network packet for transmission by

12   said second linecard out through a port connected to an output computer network;

13   a circuit determining whether or not a particular segment of said segments re-

14   ceived by said second linecard has said bit set indicating that said segment is marked, and

15   in response to detecting a segment as being marked, discarding said output packet in ac-

16   cordance with a random probability, and in response to detecting that no segment of said

17   output packet is marked, transmitting said output packet onto said computer network.

1   2. The apparatus as in claim 1 wherein said circuit further comprises a hardware

2   computer chip.

1   3. The apparatus as in claim 1 wherein said circuit further comprises an ASIC

2   chip mounted on said output linecard.

1   4. The apparatus as in claim 1 wherein said circuit further comprises a micro-

2   processor.

1   5. The apparatus as in claim 1 wherein said circuit further comprises a hardware

2 chip operating with a microprocessor.

1   6. The apparatus as in claim 1 wherein said circuit discarding said output packet

2 in accordance with a random probability further comprises:

3   said circuit counting a total number of segments received by said output linecard;

4   said circuit counting a number of said segments received by said linecard which

5 are marked;

6   said circuit calculating a ratio R by dividing said number of marked segments by

7 said total number of segments;

8   said circuit calculating a random number, said random number having a value

9 between zero and a maximum value of said ratio R;

10   said circuit causing said packet to be discarded in the event that said ratio R is

11 greater than said random number.

1   7. The apparatus as in claim 1 wherein said circuit further comprises:

2   logic for detecting a priority class of at least a selected packet of said input com-

3 puter network packets, and in response to said priority class, selecting class specific val-

4 ues in calculating a probability for discarding an output packet corresponding to said se-

5 lected input packet.

1   8. A method for operating a network device, comprising:

2   receiving computer network packets from an input computer network;

3   translating said packets into segments;

4   receiving said segments in a switching fabric, said switching fabric to route said

5 segments to a desired output linecard, said switching fabric having at least one queue

6 therein, said queue having a threshold such that in the event that a segment arrives at said

7 queue and said queue is filled above said threshold, a bit of said segment is set as said

8 segment is passed out of said queue, said bit being set "marking" said segment as that

9 segment having passed through a queue filled above said threshold level;

10   receiving said segment from said switching fabric by an output linecard, said out-

11   put linecard translating said segments into a computer network packet for transmission by

12   said output linecard out through a port connected to an output computer network;

13   determining whether or not a particular segment of said segments received by said

14   output linecard has said bit set indicating that said segment is marked;

15   discarding said output packet, in response to detecting a segment as being marked,

16   in accordance with a random probability, and in response to detecting that no segment of

17   said output packet is marked, transmitting said output packet onto said computer network.

1   9. The method for operating a network device of claim 8, wherein said deter-

2   mining step further comprises:

3   counting a total number of segments received by said output linecard;

4   counting a number of said segments received by said linecard which are marked;

5   calculating a ratio R by dividing said number of marked segments by said total

6   number of segments, the value of ratio R having a maximum value;

7   calculating a random number, said random number having a value between zero

8   and said maximum value of ratio R;

9   causing said packet to be discarded in the event that said ratio R is greater than

10   said random number.

1   10. The method for operating a network device of claim 8 further comprising:

2   detecting a priority class of at least a selected packet of said input computer net-

3   work packets;

4   selecting, in response to said priority class, class specific values in calculating a

5   probability for discarding an output packet corresponding to said selected input packet.

1   11. A computer readable device containing instructions for performing the

2   method of claim 8.

1   12 Electromagnetic signals propagating on a computer network, said electromag-

2   netic signals containing instructions for performing the method of claim 8.